

**Microsemi Corporation**

April 9, 2014

**Customer Notification No: CN1411**

**Customer Advisory Notice (CAN) – Action Required**

**Subject:** Pipeline SRAM Update for RTAX-S/SL/DSP (RTAX) and Axcelerator (AX) FPGAs in Libero IDE v9.2 Software

This notification provides information on a new SRAM design rule check (DRC) put in place for RTAX and AX designs in the Libero IDE v9.2 software. This check will prevent the usage of a pipeline SRAM configuration, which can result in a race condition in the SRAM.

Table 1 highlights the unsupported configuration as it can experience race condition.

**Table 1 Libero IDE v9.2 Design Rule Check for Unsupported SRAM Configuration**

Configurations/Results	Cases							
	1	2	3	4	5	6	7	8
Pipeline SRAM used	Yes	Yes	Yes	Yes	No	No	No	No
Read Enable toggling	Yes	No	No	Yes	Yes	Yes	No	No
128x36 RAM configuration used	Yes	No	Yes	No	Yes	No	Yes	No
<b>Race Condition</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
<b>Libero IDE 9.2 New SRAM DRC</b>	Warning for RTAX designs None for AX designs			<b>Error for RTAX and AX designs</b>	None			

In Cases 1, 2, and 3, there is no risk for race condition in the SRAM. However, the usage of pipeline SRAM prompts a warning to be issued for RTAX designs: “Pipeline registers in the SRAM memory blocks are used in this design. These registers are not hardened and can be susceptible to Single Event Upsets in radiation environments.”

This warning does not apply to AX designs.

In Case 4, this configuration is unsupported and an error message is issued: “The pipeline SRAM memory configuration in <SRAM Block Name> is not supported. Please tie <REN signal name> to logic High.”

In Cases 5, 6, 7, and 8, the pipeline option in the SRAM is not used and there is no risk of encountering the race condition in the SRAM. Therefore, no action is taken by the Libero DRC.

## Guidance for RTAX and AX designs utilizing pipeline SRAM

- A race condition in the pipeline SRAM will show as read errors in functional testing. For designs currently operating without read errors, no action is needed.
- For existing RTAX and AX designs, open the ADB file with Libero IDE v9.2 and DRC will be automatically run on the design. If the software identifies any unsupported SRAM configuration and issues error messages, users must:
  - Tie the Read Enable signal High to always enable the Read operation
  - If Read Enable cannot be tied High:
    - Use the FPGA registers to implement pipelining instead of using the pipeline registers inside the RAM blocks.
    - OR do not use pipeline SRAM at all
    - OR use 128x36 RAM configuration only, if possible

The 3 options above may affect a design's performance. Therefore, check that you have enough timing margin to use those options.

- For new RTAX and AX designs, use Libero IDE v9.2

Microsemi recommends that RTAX and AX customers upgrade to the latest version of Libero IDE v9.2 software to take advantage of this new design rule check. The Libero IDE software can be downloaded from the Microsemi website:

<http://www.microsemi.com/products/fpga-soc/design-resources/design-software/libero-ide#downloads>

## Contact Information:

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Regards,

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# Appendix

Table 2 lists the affected part numbers.

**Table 2 Affected Part Numbers**

RTAX250S/SL		
RTAX250S-CG624B	RTAX250S-CQ208V	5962-0421907QXC
5962-0421901QUA	RTAX250S-1CQ208V	RTAX250SL-1CQ352E
RTAX250S-1CG624B	RTAX250SL-CQ208B	5962-0421908QXC
5962-0421902QUA	5962-0421905QYC	RTAX250SL-CQ352V
RTAX250S-CG624E	RTAX250SL-1CQ208B	RTAX250SL-1CQ352V
5962-0421903QUA	5962-0421906QYC	RTAX250S-CQ352PROTO
RTAX250S-1CG624E	RTAX250SL-CQ208E	RTAX250S-1CQ352PROTO
5962-0421904QUA	5962-0421907QYC	RTAX250S-LG624B
RTAX250S-CG624V	RTAX250SL-1CQ208E	5962-0421901QZC
RTAX250S-1CG624V	5962-0421908QYC	RTAX250S-1LG624B
RTAX250SL-CG624B	RTAX250SL-CQ208V	5962-0421902QZC
5962-0421905QUA	RTAX250SL-1CQ208V	RTAX250S-LG624E
RTAX250SL-1CG624B	RTAX250S-CQ208PROTO	5962-0421903QZC
5962-0421906QUA	RTAX250S-1CQ208PROTO	RTAX250S-1LG624E
RTAX250SL-CG624E	RTAX250S-CQ352B	5962-0421904QZC
5962-0421907QUA	5962-0421901QXC	RTAX250S-LG624V
RTAX250SL-1CG624E	RTAX250S-1CQ352B	RTAX250S-1LG624V
5962-0421908QUA	5962-0421902QXC	RTAX250SL-LG624B
RTAX250SL-CG624V	RTAX250S-CQ352E	5962-0421905QZC
RTAX250SL-1CG624V	5962-0421903QXC	RTAX250SL-1LG624B
RTAX250S-CG624PROTO	RTAX250S-1CQ352E	5962-0421906QZC

RTAX250S-1CG624PROTO	5962-0421904QXC	RTAX250SL-LG624E
RTAX250S-CQ208B	RTAX250S-CQ352V	5962-0421907QZC
5962-0421901QYC	RTAX250S-1CQ352V	RTAX250SL-1LG624E
RTAX250S-1CQ208B	RTAX250SL-CQ352B	5962-0421908QZC
5962-0421902QYC	5962-0421905QXC	RTAX250SL-LG624V
RTAX250S-CQ208E	RTAX250SL-1CQ352B	RTAX250SL-1LG624V
5962-0421903QYC	5962-0421906QXC	RTAX250S-LG624PROTO
RTAX250S-1CQ208E	RTAX250SL-CQ352E	RTAX250S-1LG624PROTO
5962-0421904QYC		
<b>RTAX1000S/SL</b>		
RTAX1000S-CGS624B	RTAX1000S-CQ352B	RTAX1000S-LG624B
5962-0422001QUA	5962-0422001QXC	5962-0422001QYC
RTAX1000S-1CGS624B	RTAX1000S-1CQ352B	RTAX1000S-1LG624B
5962-0422002QUA	5962-0422002QXC	5962-0422002QYC
RTAX1000S-CGS624E	RTAX1000S-CQ352E	RTAX1000S-LG624E
5962-0422003QUA	5962-0422003QXC	5962-0422003QYC
RTAX1000S-1CGS624E	RTAX1000S-1CQ352E	RTAX1000S-1LG624E
5962-0422004QUA	5962-0422004QXC	5962-0422004QYC
RTAX1000S-CGS624V	RTAX1000S-CQ352V	RTAX1000S-LG624V
RTAX1000S-1CGS624V	RTAX1000S-1CQ352V	RTAX1000S-1LG624V
RTAX1000SL-CGS624B	RTAX1000SL-CQ352B	RTAX1000SL-LG624B
5962-0422005QUA	5962-0422005QXC	5962-0422005QYC
RTAX1000SL-1CGS624B	RTAX1000SL-1CQ352B	RTAX1000SL-1LG624B
5962-0422006QUA	5962-0422006QXC	5962-0422006QYC
RTAX1000SL-CGS624E	RTAX1000SL-CQ352E	RTAX1000SL-LG624E
5962-0422007QUA	5962-0422007QXC	5962-0422007QYC
RTAX1000SL-1CGS624E	RTAX1000SL-1CQ352E	RTAX1000SL-1LG624E

5962-0422008QUA	5962-0422008QXC	5962-0422008QYC
RTAX1000SL-CGS624V	RTAX1000SL-CQ352V	RTAX1000SL-LG624V
RTAX1000SL-1CGS624V	RTAX1000SL-1CQ352V	RTAX1000SL-1LG624V
RTAX1000S-CG624PROTO	RTAX1000S-CQ352PROTO	RTAX1000S-LG624PROTO
RTAX1000S-1CG624PROTO	RTAX1000S-1CQ352PROTO	RTAX1000S-1LG624PROTO
<b>RTAX2000S/SL</b>		
RTAX2000S-CG1152B	RTAX2000S-CQ256B	RTAX2000S-LG1152B
5962-0422101QTA	5962-0422101QUC	5962-0422101QMC
RTAX2000S-1CG1152B	RTAX2000S-1CQ256B	RTAX2000S-1LG1152B
5962-0422102QTA	5962-0422102QUC	5962-0422102QMC
RTAX2000S-CG1152E	RTAX2000S-CQ256E	RTAX2000S-LG1152E
5962-0422103QTA	5962-0422103QUC	5962-0422103QMC
RTAX2000S-1CG1152E	RTAX2000S-1CQ256E	RTAX2000S-1LG1152E
5962-0422104QTA	5962-0422104QUC	5962-0422104QMC
RTAX2000S-CG1152V	RTAX2000S-CQ256V	RTAX2000S-LG1152V
RTAX2000S-1CG1152V	RTAX2000S-1CQ256V	RTAX2000S-1LG1152V
RTAX2000SL-CG1152B	RTAX2000SL-CQ256B	RTAX2000SL-LG1152B
5962-0422105QTA	5962-0422105QUC	5962-0422105QMC
RTAX2000SL-1CG1152B	RTAX2000SL-1CQ256B	RTAX2000SL-1LG1152B
5962-0422106QTA	5962-0422106QUC	5962-0422106QMC
RTAX2000SL-CG1152E	RTAX2000SL-CQ256E	RTAX2000SL-LG1152E
5962-0422107QTA	5962-0422107QUC	5962-0422107QMC
RTAX2000SL-1CG1152E	RTAX2000SL-1CQ256E	RTAX2000SL-1LG1152E
5962-0422108QTA	5962-0422108QUC	5962-0422108QMC
RTAX2000SL-CG1152V	RTAX2000SL-CQ256V	RTAX2000SL-LG1152V
RTAX2000SL-1CG1152V	RTAX2000SL-1CQ256V	RTAX2000SL-1LG1152V
RTAX2000S-CG1152PROTO	RTAX2000S-CQ256PROTO	RTAX2000S-LG1152PROTO

RTAX2000S-1CG1152PROTO	RTAX2000S-1CQ256PROTO	RTAX2000S-1LG1152PROTO
RTAX2000S-CGS624B	RTAX2000S-CQ352B	RTAX2000S-LG624B
5962-0422101QNA	5962-0422101QXC	5962-0422101QYC
RTAX2000S-1CGS624B	RTAX2000S-1CQ352B	RTAX2000S-1LG624B
5962-0422102QNA	5962-0422102QXC	5962-0422102QYC
RTAX2000S-CGS624E	RTAX2000S-CQ352E	RTAX2000S-LG624E
5962-0422103QNA	5962-0422103QXC	5962-0422103QYC
RTAX2000S-1CGS624E	RTAX2000S-1CQ352E	RTAX2000S-1LG624E
5962-0422104QNA	5962-0422104QXC	5962-0422104QYC
RTAX2000S-CGS624V	RTAX2000S-CQ352V	RTAX2000S-LG624V
RTAX2000S-1CGS624V	RTAX2000S-1CQ352V	RTAX2000S-1LG624V
RTAX2000SL-CGS624B	RTAX2000SL-CQ352B	RTAX2000SL-LG624B
5962-0422105QNA	5962-0422105QXC	5962-0422105QYC
RTAX2000SL-1CGS624B	RTAX2000SL-1CQ352B	RTAX2000SL-1LG624B
5962-0422106QNA	5962-0422106QXC	5962-0422106QYC
RTAX2000SL-CGS624E	RTAX2000SL-CQ352E	RTAX2000SL-LG624E
5962-0422107QNA	5962-0422107QXC	5962-0422107QYC
RTAX2000SL-1CGS624E	RTAX2000SL-1CQ352E	RTAX2000SL-1LG624E
5962-0422108QNA	5962-0422108QXC	5962-0422108QYC
RTAX2000SL-CGS624V	RTAX2000SL-CQ352V	RTAX2000SL-LG624V
RTAX2000SL-1CGS624V	RTAX2000SL-1CQ352V	RTAX2000SL-1LG624V
RTAX2000S-CG624PROTO	RTAX2000S-CQ352PROTO	RTAX2000S-LG624PROTO
RTAX2000S-1CG624PROTO	RTAX2000S-1CQ352PROTO	RTAX2000S-1LG624PROTO
<b>RTAX4000S/SL</b>		
RTAX4000S-CG1272B	RTAX4000S-CQ352B	RTAX4000S-LG1272B
5962-0822401QZA	5962-0822401QXC	5962-0822401QYC
RTAX4000S-1CG1272B	RTAX4000S-1CQ352B	RTAX4000S-1LG1272B

5962-0822402QZA	5962-0822402QXC	5962-0822402QYC
RTAX4000S-CG1272E	RTAX4000S-CQ352E	RTAX4000S-LG1272E
5962-0822403QZA	5962-0822403QXC	5962-0822403QYC
RTAX4000S-1CG1272E	RTAX4000S-1CQ352E	RTAX4000S-1LG1272E
5962-0822404QZA	5962-0822404QXC	5962-0822404QYC
RTAX4000S-CG1272V	RTAX4000S-CQ352V	RTAX4000S-LG1272V
RTAX4000S-1CG1272V	RTAX4000S-1CQ352V	RTAX4000S-1LG1272V
RTAX4000SL-CG1272B	RTAX4000SL-CQ352B	RTAX4000SL-LG1272B
5962-0822405QZA	5962-0822405QXC	5962-0822405QYC
RTAX4000SL-1CG1272B	RTAX4000SL-1CQ352B	RTAX4000SL-1LG1272B
5962-0822406QZA	5962-0822406QXC	5962-0822406QYC
RTAX4000SL-CG1272E	RTAX4000SL-CQ352E	RTAX4000SL-LG1272E
5962-0822407QZA	5962-0822407QXC	5962-0822407QYC
RTAX4000SL-1CG1272E	RTAX4000SL-1CQ352E	RTAX4000SL-1LG1272E
5962-0822408QZA	5962-0822408QXC	5962-0822408QYC
RTAX4000SL-CG1272V	RTAX4000SL-CQ352V	RTAX4000SL-LG1272V
RTAX4000SL-1CG1272V	RTAX4000SL-1CQ352V	RTAX4000SL-1LG1272V
RTAX4000S-CG1272PROTO	RTAX4000S-CQ352PROTO	RTAX4000S-LG1272PROTO
RTAX4000S-1CG1272PROTO	RTAX4000S-1CQ352PROTO	RTAX4000S-1LG1272PROTO
<b>RTAX2000D/DL</b>		
RTAX2000D-CGD1272B	RTAX2000D-LGD1272B	RTAX2000D-CQ352B
RTAX2000D-1CGD1272B	RTAX2000D-1LGD1272B	RTAX2000D-1CQ352B
RTAX2000D-CGD1272E	RTAX2000D-LGD1272E	RTAX2000D-CQ352E
RTAX2000D-1CGD1272E	RTAX2000D-1LGD1272E	RTAX2000D-1CQ352E
RTAX2000D-CGD1272V	RTAX2000D-LGD1272V	RTAX2000D-CQ352V
RTAX2000D-1CGD1272V	RTAX2000D-1LGD1272V	RTAX2000D-1CQ352V
RTAX2000D-CGD1272PROTO	RTAX2000D-LGD1272PROTO	RTAX2000D-CQ352PROTO



RTAX2000D-1CGD1272PROTO	RTAX2000D-1LGD1272PROTO	RTAX2000D-1CQ352PROTO
RTAX2000DL-CQ352V	RTAX2000DL-1CGD1272B	RTAX2000DL-1LGD1272B
RTAX2000DL-1CQ352V	RTAX2000DL-CGD1272E	RTAX2000DL-LGD1272E
RTAX2000DL-CGD1272B	RTAX2000DL-1CGD1272E	RTAX2000DL-1LGD1272E
RTAX2000DL-1CQ352B	RTAX2000DL-CGD1272V	RTAX2000DL-LGD1272V
RTAX2000DL-CQ352E	RTAX2000DL-1CGD1272V	RTAX2000DL-1LGD1272V
RTAX2000DL-1CQ352E	RTAX2000DL-LGD1272B	RTAX2000DL-CQ352B
5962-0422110QXC	5962-0422110VXC	5962-0422116QXC
5962-0422111QXC	5962-0422113QXC	5962-0422113VXC
5962-0422112QXC	5962-0422114QXC	5962-0422114VXC
<b>RTAX4000D/DL</b>		
RTAX4000D-CGD1272B	RTAX4000D-CQ352V	5962-0822409QXC
RTAX4000D-1CGD1272B	RTAX4000D-1CQ352V	5962-0822410QXC
RTAX4000D-CGD1272E	RTAX4000D-CQ352PROTO	RTAX4000DL-CGD1272B
RTAX4000D-1CGD1272E	RTAX4000D-1CQ352PROTO	RTAX4000DL-1CGD1272B
RTAX4000D-CGD1272V	5962-0822411QXC	RTAX4000DL-CGD1272E
RTAX4000D-1CGD1272V	5962-0822412QXC	RTAX4000DL-1CGD1272E
RTAX4000D-CGD1272PROTO	5962-0822409VXC	RTAX4000DL-CGD1272V
RTAX4000D-1CGD1272PROTO	5962-0822410VXC	RTAX4000DL-1CGD1272V
RTAX4000D-LGD1272B	5962-0822413QXC	RTAX4000DL-LGD1272B
RTAX4000D-1LGD1272B	5962-0822414QXC	RTAX4000DL-1LGD1272B
RTAX4000D-LGD1272E	5962-0822415QXC	RTAX4000DL-LGD1272E
RTAX4000D-1LGD1272E	5962-0822416QXC	RTAX4000DL-1LGD1272E
RTAX4000D-LGD1272V	5962-0822413VXC	RTAX4000DL-LGD1272V
RTAX4000D-1LGD1272V	5962-0822414VXC	RTAX4000DL-1LGD1272V
RTAX4000D-LGD1272PROTO	RTAX4000D-CQ352E	RTAX4000DL-CQ352B
RTAX4000D-1LGD1272PROTO	RTAX4000D-1CQ352E	RTAX4000DL-1CQ352B

RTAX4000D-CQ352B	RTAX4000DL-CQ352V	RTAX4000DL-CQ352E
RTAX4000D-1CQ352B	RTAX4000DL-1CQ352V	RTAX4000DL-1CQ352E
<b>AX125</b>		
AX125-FG256	AX125-1FG256I	AX125-2FG324
AX125-FGG256	AX125-1FGG256I	AX125-2FGG324
AX125-1FG256	AX125-2FG256I	AX125-FG324I
AX125-1FGG256	AX125-2FGG256I	AX125-FGG324I
AX125-2FG256	AX125-FG324	AX125-1FG324I
AX125-2FGG256	AX125-FGG324	AX125-1FGG324I
AX125-FG256I	AX125-1FG324	AX125-2FG324I
AX125-FGG256I	AX125-1FGG324	AX125-2FGG324I
<b>AX250</b>		
AX250-FG256	AX250-1FG484	AX250-1PQG208
AX250-FGG256	AX250-1FGG484	AX250-2PQ208
AX250-1FG256	AX250-2FG484	AX250-2PQG208
AX250-1FGG256	AX250-2FGG484	AX250-PQ208I
AX250-2FG256	AX250-FG484I	AX250-PQG208I
AX250-2FGG256	AX250-FGG484I	AX250-1PQ208I
AX250-FG256I	AX250-1FG484I	AX250-1PQG208I
AX250-FGG256I	AX250-1FGG484I	AX250-2PQ208I
AX250-1FG256I	AX250-2FG484I	AX250-2PQG208I
AX250-1FGG256I	AX250-2FGG484I	AX250-PQ208M
AX250-2FG256I	AX250-FG484M	AX250-PQG208M
AX250-2FGG256I	AX250-FGG484M	AX250-1PQ208M
AX250-FG256M	AX250-1FG484M	AX250-1PQG208M
AX250-FGG256M	AX250-1FGG484M	AX250-CQ208M
AX250-1FG256M	AX250-PQ208	AX250-1CQ208M

AX250-1FGG256M	AX250-PQG208	AX250-CQ352M
AX250-FG484	AX250-1PQ208	AX250-1CQ352M
AX250-FGG484		
<b>AX500</b>		
AX500-FG484	AX500-1FG676	AX500-1PQG208
AX500-FGG484	AX500-1FGG676	AX500-2PQ208
AX500-1FG484	AX500-2FG676	AX500-2PQG208
AX500-1FGG484	AX500-2FGG676	AX500-PQ208I
AX500-2FG484	AX500-FG676I	AX500-PQG208I
AX500-2FGG484	AX500-FGG676I	AX500-1PQ208I
AX500-FG484I	AX500-1FG676I	AX500-1PQG208I
AX500-FGG484I	AX500-1FGG676I	AX500-2PQ208I
AX500-1FG484I	AX500-2FG676I	AX500-2PQG208I
AX500-1FGG484I	AX500-2FGG676I	AX500-PQ208M
AX500-2FG484I	AX500-FG676M	AX500-PQG208M
AX500-2FGG484I	AX500-FGG676M	AX500-1PQ208M
AX500-FG484M	AX500-1FG676M	AX500-1PQG208M
AX500-FGG484M	AX500-1FGG676M	AX500-CQ208M
AX500-1FG484M	AX500-PQ208	AX500-1CQ208M
AX500-1FGG484M	AX500-PQG208	AX500-CQ352M
AX500-FG676	AX500-1PQ208	AX500-1CQ352M
AX500-FGG676		
<b>AX1000</b>		
AX1000-FG484	AX1000-1FG676I	AX1000-1BGG729M
AX1000-FGG484	AX1000-1FGG676I	AX1000-FG896
AX1000-1FG484	AX1000-2FG676I	AX1000-FGG896
AX1000-1FGG484	AX1000-2FGG676I	AX1000-1FG896

AX1000-2FG484	AX1000-FG676M	AX1000-1FGG896
AX1000-2FGG484	AX1000-FGG676M	AX1000-2FG896
AX1000-FG484I	AX1000-1FG676M	AX1000-2FGG896
AX1000-FGG484I	AX1000-1FGG676M	AX1000-FG896I
AX1000-1FG484I	AX1000-BG729	AX1000-FGG896I
AX1000-1FGG484I	AX1000-BGG729	AX1000-1FG896I
AX1000-2FG484I	AX1000-1BG729	AX1000-1FGG896I
AX1000-2FGG484I	AX1000-1BGG729	AX1000-2FG896I
AX1000-FG484M	AX1000-2BG729	AX1000-2FGG896I
AX1000-FGG484M	AX1000-2BGG729	AX1000-FG896M
AX1000-1FG484M	AX1000-BG729I	AX1000-FGG896M
AX1000-1FGG484M	AX1000-BGG729I	AX1000-1FG896M
AX1000-FG676	AX1000-1BG729I	AX1000-1FGG896M
AX1000-FGG676	AX1000-1BGG729I	AX1000-CQ352M
AX1000-1FG676	AX1000-2BG729I	AX1000-1CQ352M
AX1000-1FGG676	AX1000-2BGG729I	AX1000-CGS624M
AX1000-2FG676	AX1000-BG729M	AX1000-1CGS624M
AX1000-2FGG676	AX1000-BGG729M	AX1000-LG624M
AX1000-FG676I	AX1000-1BG729M	AX1000-1LG624M
AX1000-FGG676I		
<b>AX2000</b>		
AX2000-FG896	AX2000-1FG896M	AX2000-2FGG1152I
AX2000-FGG896	AX2000-1FGG896M	AX2000-FG1152M
AX2000-1FG896	AX2000-FG1152	AX2000-FGG1152M
AX2000-1FGG896	AX2000-FGG1152	AX2000-1FG1152M
AX2000-2FG896	AX2000-1FG1152	AX2000-1FGG1152M
AX2000-2FGG896	AX2000-1FGG1152	AX2000-CQ256M

AX2000-FG896I	AX2000-2FG1152	AX2000-1CQ256M
AX2000-FGG896I	AX2000-2FGG1152	AX2000-CQ352M
AX2000-1FG896I	AX2000-FG1152I	AX2000-1CQ352M
AX2000-1FGG896I	AX2000-FGG1152I	AX2000-CGS624M
AX2000-2FG896I	AX2000-1FG1152I	AX2000-1CGS624M
AX2000-2FGG896I	AX2000-1FGG1152I	AX2000-LG624M
AX2000-FG896M	AX2000-2FG1152I	AX2000-1LG624M
AX2000-FGG896M		